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Addendum

Contribution by non-governmental organizations**

Contents

		Page
I.	Introduction	2
II.	Ten-year framework of programmes on sustainable consumption and production	4
III.	Mining	7
IV.	Chemicals	9
V.	Waste	12
VI.	Transport	15

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I. Introduction

1. Non-governmental organizations (NGOs) and other civil society organizations have played an active and significant role in helping the world move towards sustainable development.[1] from grassroots organizations working locally on issues ranging from social justice to sustainable community development, to networks of organizations working with businesses and different levels of government to promote broad social change and ecologically sustainable economies and lifestyles, civil society organizations are key allies in the move to change unsustainable consumption and production patterns. As one of the United Nations major groups, NGOs are taking stock of their respective countries' actions with regard to their commitments, and are deeply concerned about the lack of significant progress.

2. The eighteenth session of the Commission on Sustainable Development presents a late but significant opportunity to explore progress made by Member States on mining, chemicals, waste and transportation, through the lens of their international sustainable development commitments, and to discuss them within the broader framework of consumption and production patterns.

3. Although the original 10-year framework (2002 to 2012) established as a corrective response to the implementation gap of the previous decade was missed, the Marrakech Process, whose mandate is to develop a "Ten-year framework of programmes in support of regional and national initiatives to accelerate the shift towards sustainable patterns of consumption and production that will promote social and economic development within the carrying capacity of ecosystems", offers an avenue by which both existing and new regional and national initiatives on mining, chemicals, waste, transportation and all other sustainability-related themes can be supported.

4. We believe it is essential that Governments, business sector groups and other major groups worldwide commit to implementing policies that will guide us towards a sustainable course. It is equally essential that citizens everywhere be empowered to adopt more sustainable production and consumption patterns and be enabled to assume their rights and responsibilities. It is very important that there be a special focus on empowering Governments and civil society organizations and on strengthening democracy, not only in Western and developing countries but especially in the countries in transition, where democracy is still a vague concept.

5. Social and environmental trends have worsened since the United Nations Conference on Environment and Development in 1992. It is clear that part of the problem is increasingly unsustainable production and consumption patterns and the uneven pressures of globalization. In addition, the material and financial flows from

[1] The present paper was submitted by the Sustainable Development Issues Network, which consists of the Northern Alliance for Sustainability, Brussels; Consumers International, London; and the Institute for Security Studies, Nairobi, with partner networks in Asia, the Middle East and Latin America. The Sustainable Development Issues Network group invited the following non-governmental organization (NGO) networks to draft the original sections of the paper: Waste management: by WASTE Advisers on Urban Environment and Development; Transport: by Transport and Environment; Chemicals: by the Environmental Health Fund, a participating organization of the International POPs Elimination Network; Mining: by Observatorio de Conflictos Mineros de América Latina; the Ten-Year Framework of Programmes on Sustainable Consumption and Production Patterns: by the Northern Alliance for Sustainability and Consumers International.

the global South towards the global North still outstrip all the aid and development assistance that the rich countries provide — an amount still far below the agreed goal of 0.7 per cent of gross domestic product (GDP). These financial and material flows can be considered a kind of reversed international cooperation aid, with the poor South helping to maintain the lifestyles in the industrialized world. The consequences of such unbalanced relations and lack of meaningful cooperation widen the gap between the rich and the poor and exacerbate geopolitical tensions.

6. It is thus of utmost importance that the Commission on Sustainable Development review session evaluate how these and other forces have blocked progress in the past and how we might overcome them in the future. A serious review of "implementation" requires a whole-system approach that includes clearly defined, concrete and measurable targets, timetables and monitoring, on a timely basis. This requires tailor-made approaches.

7. We suggest that more fundamental research on material flows and the impact of consumption and production patterns on the environment, poverty eradication and equity be conducted at the national and international levels. Even more important is the need to determine the underlying drivers of the flows that cause poverty on the one hand and extreme wealth on the other. We also suggest that GDP is insufficient as a national indicator of progress and general welfare and urge the world community and political leaders, in particular to include indicators of real sustainable development in their national accounting, including the Ecological Footprint, the Index of Sustainable Economic Welfare, the Genuine Progress Indicator and the Happy Planet Index.

8. A continuing priority for Governments must be to implement their long-standing commitment to prioritize sustainable production and consumption policies and integrate them into their national sustainable development strategies. Economic models and priorities, which are currently grounded in a growth mentality in a limit-free world, will need to be revised. A few countries have made progress in establishing and implementing national plans on sustainable consumption and production, or have managed to integrate sustainable consumption and production policies in a national sustainable development strategy or poverty reduction strategy. In addition, it is clear that insufficient emphasis has been placed on proven instruments that drive sustainable consumption and production changes, such as taxation and other fiscal tools, product norms and choice editing and empowerment of citizens for sustainable lifestyles through education. Similarly, a concerted effort is needed to ensure that sustainable consumption and production is integrated in educational programmes and curriculums, through participation in and interlinkages with the United Nations Decade of Education for Sustainable Development.

9. The issues of mining, transport, chemicals and waste are strongly interconnected with sustainable consumption and production, and cannot be viewed in isolation. The challenge of this cycle of the Commission on Sustainable Development is to discuss the other issues through a sustainable consumption and production lens.

II. Ten-year framework of programmes on sustainable consumption and production

A. Main obstacles to moving forward

10. Technological advances and efficiency gains are necessary but will not, in and of themselves, bring about the required scale of change towards sustainable development. This is despite the rhetoric around efficiency, the presumed purpose of which is to avoid the real underlying but politically difficult questions of wealth redistribution and absolute reductions in energy and material consumption at the global level. More fundamental changes in the ways we produce and consume are needed. The world community, with rich countries taking the lead, must shift to a "sustainable and fair economy" paradigm.

11. When they adopted Agenda 21 in 1992, Member States committed to developing national policies on sustainable production and consumption. This was followed by an international programme of work to clarify the concepts and evaluate policies and strategies. In 1999, the General Assembly adopted the revised United Nations Guidelines for Consumer Protection to help develop those policies, in particular around sustainable consumption. However, almost two decades after the Rio Summit, many Governments have not developed production and consumption policies and continue to jeopardize the health of both people and planet with unsustainable activities related to chemicals, transport, water, food, shelter, energy and other issues on the Commission on Sustainable Development's programme of work. Despite their commitments, many governments have not only not applied the Consumer Guidelines (in particular, section G on sustainable consumption), but remain unfamiliar with them and find it difficult to develop their national sustainable development strategies.

12. There are numerous reasons for this lack of will and progress and the consequences will become increasingly serious if they are not understood and addressed. The obstacles (financial, economic, technological, ideological, cultural and cognitive) must also be identified and addressed. The Commission on Sustainable Development, as a key part of the review of progress, and in the discussion of policies to ensure progress, is one of the best places to consider such obstacles.

13. The main problem is that, despite the enormous crises we face today, world leaders still preach business-as-usual policies that largely disregard the complexity and interlinkages between the environmental, social and economic spheres. Governments lack the political will to effect an urgently required transition. Furthermore, there are no international legal frameworks for the prevention and punishment of environmental crimes or injustice.

1. National strategies on sustainable consumption and production

14. We believe that the resistance of Governments to developing adequate national sustainable consumption and production policy frameworks is combined with a continued promotion of unsustainable consumerism, an erosion of trust and accountability of the private sector, inadequate regulation for sectors whose profits depend on unsustainable consumption (as witnessed by the global financial crisis)

and, lastly, a lack of understanding of the forces driving unsustainable production and consumption patterns.

15. Given that only 82 countries are implementing their national sustainability strategies and that relatively few of these are in the developing world, it is essential to help Governments to complete and fully implement such strategies and to integrate their 10-year framework of programmes as a key part of their national strategy plans. It must be determined why "Capacity 2015" was never funded nor implemented; and the international community must put in place sufficient programmes and support to ensure that this can and will be done. This also applies to the United Nations Guidelines for Consumer Protection.

2. Marrakech Process (10-year framework of programmes on sustainable consumption and production) and the Commission on Sustainable Development

16. The third public draft of the Marrakech Process has evolved substantially from earlier versions, and includes many comments by NGOs. The current draft, which will be further revised between now and May 2010, will serve as a starting point for discussions at the eighteenth session of the Commission on Sustainable Development on the structure and content of the 10-year framework of programmes, to be finalized at the nineteenth session. One of the outcomes of the 10-year framework of programmes is a mapping tool (see annex 1 of the framework programme; however, it is not sufficient) for concrete use. The mapping tool forces Governments and stakeholders to prioritize one of the various measures needed for on sustainable consumption and production policies, while the main conclusion of the Marrakech Process is that we need a mix of measures. There are better proposals for mapping the future programmes.

17. The third public draft of the 10-year framework of programmes states that we need to identify specific activities, tools, policies, measures and monitoring and assessment mechanisms, including, where appropriate, life cycle analysis and national indicators for measuring progress; the Commission on Sustainable Development process therefore ought to determine the extent to which each of these is, or is not, already in place, and the types of national and international programmes of support that would be needed to ensure worldwide implementation.

18. The international community also needs to examine the extent to which monies have been made available to support civil society's efforts to develop and participate in mechanisms and partnerships that can deliver support for the design, adoption and implementation of sustainable consumption and production programmes and policies. The only appropriate regulatory, financial and legal frameworks are those that would lead to the rapid achievement of full sustainability and ensure that all people's basic human needs can be met quickly, preferably by 2020 or 2025.

19. We find the 10-year framework unclear on a number of issues, including:

(a) How the inputs from the Marrakech Process to the Commission on Sustainable Development intend to move the sustainable consumption and production agenda along (see p. 5, third public draft, 2 September 2009);

(b) How and when the 10-year framework vision will be developed (see p. 6, para. 2.1.1);

(c) How to encourage all stakeholders to complete a more adequate mapping tool and support the prioritized programmes and, more generally, what the mapping tool will lead to and how it will be of use to countries and other stakeholders;

(d) The time frame for the 10-year framework; we support another 10 years, from 2012 to 2022, but with targets to be achieved in 2016;

(e) The lack of review-based facts and figures on social and environmental trends that need to be reversed within the "lifespan" of the 10-year framework;

(f) A comprehensive review of the various regional and national sustainable consumption and production initiatives and their effectiveness and impacts;

(g) A system for effective monitoring and evaluation that includes various indicators, such as gender equalities, carbon emissions, food miles and water use.

B. Possible approaches and best practices for implementation

20. There is a need for more coherence in policymaking. Sustainable development must be the framework for all long-term strategies and policies, with an action-oriented approach.

21. The "beyond GDP" debate can be strengthened and upgraded to a higher level for policymaking. There are already best practices for indicators, such as Bhutan's Happiness Index, the Index of Sustainable Economic Welfare, Sustainable National Income, the Ecological Footprint and social indicators. This will lead us to end the obsession with growth and focus on the economy of sufficiency (namely, to stop overconsumption and encourage the redistribution of wealth).

22. Strict product norms are a good tool for increasing choice editing for consumers. One could think of banning sports utility vehicles, a product we cannot legitimately produce in a peak oil period. We need to focus more on the production aspect, in order to guide the consumption aspect.

23. Education on sustainable consumption and production is very important, inter alia, to create a constituency for urgent measures by Governments. This can be achieved, in part, through the dissemination of information but, mostly, through lifelong learning and the exchange of experiences. This would include sharing information on best practices through the mass media, by creating national and international information exchange and communication between journalists, and paying special attention to so-called new media, along with creating a better image of sustainable products and transparent labelling.

C. How to mobilize further action; reporting on result-oriented activities on sustainable consumption and production led by major groups

24. The 10-year framework should map out what a sustainable future holds; this should be discussed at the eighteenth and nineteenth sessions of the Commission on Sustainable Development. For example, sustainable consumption and production might require goals such as a 100 per cent transition to renewable energy, full restoration of the natural environment, a complete phase-out of toxic materials, zero

waste, all externalities included and responsibly dealt with in the manufacture and development of all goods and services, and provision for respecting basic human rights, providing services, and meeting needs, for all peoples.

25. Non-governmental organizations have played an important role in developing and promoting the sustainable consumption and production agenda, including the United Nations Consumer Guidelines and the concept of corporate accountability. NGOs have proven to be very creative and experienced in bottom-up approaches, and therefore play a key role in implementation. Sustainable consumption and production must be linked with other cross-cutting issues, with the active involvement of all stakeholders at various levels.

26. Many stakeholders work in isolation. Connecting innovators is crucial for coherence, and a driving force for change. Many Government administrations also have a tendency to work in isolation. Transition management urgently requires joint deliberation action. The role of the media must be enhanced, so that it can serve as an agent for transition.

27. With respect to corporate social responsibility and accountability, the Global Reporting Initiative has developed an interesting set of global sustainability reporting guidelines, which could be made obligatory for large or transnational corporations.

28. Companies that have joined the Global Compact are ready to learn about sustainable consumption and production and sustainable development in general. NGOs should be closely involved in this kind of communication.

29. It is necessary to stress innovation, research and societal changes that support sustainable consumption and production and to identify obstacles, tools, strategies and the roles of all stakeholders, including Government, at all levels. The economy should be based on the provision of public goods and services, rather than on unlimited consumerism. Given the repeated failure of Governments to adequately respond to and act on their commitments, the United Nations, including the Commission on Sustainable Development, need to develop a specific process, supportive activities and mechanisms to assist all countries in realigning their subsidy programmes and sustainability policies. Any unsustainable use of natural resources must fully pay for itself and for the replacement of lost resources.

III. Mining

30. The spirit of the language in Agenda 21 and the Johannesburg Plan of Implementation seems overly positive, in comparison to the on-the-ground reality of mining activities in both developing and developed countries.

A. Background

31. A constant criticism of the transnational mining industry is its lack of interest in and respect for local communities. In many cases, the State is increasingly identified with the business of looting natural resources and with environmental destruction; as a result, companies and countries have accumulated a social and ecological debt to local communities, especially in the ecosystems of the South.

32. Because this has become a common trend in large-scale mining, the concept of ecological and social debt is gaining ground in the discussion on development and sustainability in the South.

33. When local communities legitimately resist the mining of natural resources and the extremely negative impacts on their living conditions, conflicts often reach the level of violence, at a high social cost to the local community. Governments criminalize environmental and indigenous movements, which makes it more difficult for them to fight for their human right to live in a healthy environment.

34. National legislation to protect the quality, quantity and accessibility of water in mining zones is crucial, since mining directly affects the health and livelihood of local communities, especially indigenous peoples and women. Currently, such legislation is weak or non-existent in many jurisdictions. While there is a global move towards achieving transparency in the extractive sector, often the main aim is to expose how much corporations pay to Governments. It is essential that this be extended to include reporting on volumes of resources that are being extracted in an independent verifiable way.

B. Obstacles

35. Decisions regarding the benefits of mining projects must be based on available information, legislation, consultation and early social and environmental impact assessment. NGOs and other organizations support communities and have extensive experience in collecting, systematizing and analysing information on mining activities and their impacts on different regions of the planet, although, unfortunately, data are often collected only after the damage is done.

36. The economic activities of local communities are frequently classified as unsustainable, within the framework of globalization and international market supply. They do, however, provide food for the people and supply local markets. The extractive industry does not bring local communities many benefits; in fact, its effects are mainly negative. Mining companies do not even provide jobs, since they tend to seek workers in poor urban neighbourhoods. It is also common practice to divide communities, in order to facilitate the industry's operations.

37. It is well known that the villages abandoned by extractive industries are the poorest and most polluted. The extractive model does not take into account alternative post-mining development and Governments do not address the problem. In short, there is no benefit to the communities during the extractive activities and, by the time operations shut down, the damage is irreversible. In this case, ghost towns and poverty are the sad reality of "modern development".

C. Possible approaches and best practices

38. International and national policy and legislation must be developed to ensure that priority is given to human rights such as the production of food, clean water, a healthy environment and security, rather than to mining interests and profits.

39. Communities reject destructive extractive activity and require strict compliance with environmental regulations and measures to protect the environment, ecosystems, the health of the population and their means of livelihood.

Water is the most vulnerable resource and is crucial for the population and traditional production activities.

40. The majority of mining companies and investors are based in the North and most of the products are mined to meet the consumption demands in the North. This is where we see a strong interlinkage between unsustainable patterns of production and consumption and economic interests.

41. Mining activities would not exist on the current scale if they were not backed by international financial institutions. Investors from the North therefore have an increased responsibility for the impacts on regions in the South and should at least follow the Organization for Economic Cooperation and Development (OECD) Guidelines for Multinational Enterprises.

42. It is essential to strengthen North-South partnerships, since this will make it easier to analyse the question and to apply pressure, at both ends of the production chain, to reduce both the demand for minerals (sustainable consumption and production) and the negative effects of mining.

43. Mining operations have become a reality for local communities. Programmes for decreasing the damage and supporting alternative economic activities must therefore be developed.

IV. Chemicals

A. Trends and obstacles

44. There is very little information available on some 80,000-100,000 chemicals currently in use, even though Agenda 21 was adopted almost two decades ago. Chapter 19 of the Agenda emphasizes that the broadest possible awareness of chemical risks is a prerequisite for achieving chemical safety. Toxic chemicals in products threaten human health. Harmful chemicals in products have become a global problem, through international trade. Examples include children's toys, textiles, jewellery, electronics and furniture. Vulnerable groups, such as children and pregnant women, are at particular risk from exposure to a variety of substances contained in these products. There is no global system for providing information on chemicals in products to consumers and others.

45. The key principles of chemicals regulatory policy are not widely implemented. Four of these principles, in particular, have not been incorporated in legal instruments:

(a) "No data, no market" requires that a comprehensive set of data and information about a chemical be made available to regulators and users before it can be sold;

(b) Effective implementation of the right to know would provide data relevant to the health and environmental effects of chemicals, not only to Governments, but also to the public;

(c) The progressive substitution of the most dangerous chemicals when suitable alternatives have been identified creates economic incentives for enterprises that are able to bring safer alternatives into the market;

(d) In compliance with the precautionary principle, manufacturers, importers and downstream users must ensure that the chemicals they manufacture, market or use do not adversely affect human health or the environment. However, nearly two decades after Rio Principle 15 recommended implementation of the precautionary approach, political pressure has turned the issue into a debate about whether action can be taken if there is uncertainty.

46. The participation of civil society in decision-making remains inadequate. Public participation in chemical assessment and management is still deficient and there is a lack of both resources and commitment. This is inconsistent with Rio Principle 20.

47. Highly hazardous and obsolete pesticides continue to harm human, animal and environmental health. In many developing and transition countries, pesticides are the largest source of chemical exposure and harm to health and the environment.[2] In South and Southeast Asia, nearly half the workforce is involved in agriculture and in sub-Saharan Africa, two thirds of all employed workers engage in agricultural activities.[3] The Food and Agriculture Organization of the United Nations (FAO) International Code of Conduct on the Distribution and Use of Pesticides has not been fully implemented and the progressive ban of highly hazardous pesticides has not been enforced.

48. With respect to the global contamination of fish with mercury, fish is a staple food needed for protein in many parts of the world, including Asia, Africa and the small island developing States. However, fish are widely contaminated with mercury, which is highly toxic to humans, especially children. Mercury is traded globally and is used in products and chlor-alkali plants; it is emitted from coal-fired power plants, incinerators, cement kilns and contaminated sites.

49. Developing and transition countries need financial and technical resources for sound chemicals management. Many countries have substantial legacy issues, such as obsolete pesticide stockpiles and contaminated sites. A large number require development of infrastructure and capacity. New and additional funds need to be long-term and sustainable to have a lasting impact.

50. Chemical safety has not been successfully integrated into sustainable development planning. In 2006, Ministers of Environment and Health from more than 100 countries and private sector and civil society representatives finalized the Strategic Approach to International Chemicals Management and reaffirmed that there is a critical link between chemical safety, sustainable development and poverty eradication in the Dubai Declaration on International Chemicals Management.[4] To date, this commitment has not been fulfilled. Donor countries insist on country-

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[2] See *Acute Pesticide Poisoning: A Major Global Health Problem*, J. Jeyaratnam, World Health Statistics Quarterly, vol. 43, No. 3, 1990: http://www.communityipm.org/toxictrail/Documents/Jeryaratnam-WHO1990.pdf estimates that there are possibly 1 million cases of serious unintentional pesticide poisonings each year and an additional 2 million cases of people hospitalized for suicide attempts with pesticides.

[3] *Employment by sector*, ILO 2007: http://www.ilo.org/public/english/employment/strat/kilm/download/kilm04.pdf (cited by M. A. Watts, 2009).

[4] "The sound management of chemicals is essential if we are to achieve sustainable development, including the eradication of poverty and disease, the improvement of human health and the environment and the elevation and maintenance of the standard of living in countries at all levels of development".

driven programmes and maintain that, if developing countries do not prioritize sound chemicals management, they will not grant the money. On the other hand, developing country officials who understand the link and recognize its importance often find themselves in low-capacity or politically weak ministries and cannot get sound chemicals management accepted as a government priority for development assistance. Support for chemical safety becomes unpredictable, as it is delivered on a project-by-project basis instead of occupying a place at the core of economic and development policies at senior levels of government.

51. Internalization of costs has not been broadly implemented. The polluter-pays-principle[5] and its application to the internalization of costs in chemicals management is widely supported but not broadly implemented. When chemicals are produced or used in a country, the Government is obligated to ensure that human health and the environment are not harmed as a result of chemical exposure or chemical accidents. The costs Governments incur in fulfilling this obligation are economic externalities that arise as a result of economic decisions by industries to manufacture and use chemicals.[6] Without internalization, the costs Governments incur for sound chemicals management amount to a subsidy of the private sector. One way to remedy these inefficiencies is to create mechanisms for internalizing costs. The global chemical industry has an annual turnover of approximately $3.1 trillion per year (trillion = thousand billion). If a global cost recovery scheme yielded only 0.1 per cent of the industry's annual turnover, more than $3 billion would be available for sound chemicals management.

52. Regarding liability and compensation, the Strategic Approach to International Chemicals Management is the principal political programme of action for implementing the Johannesburg Plan of Implementation, Agenda 21 and the Rio Principles; however, during its negotiation, a small number of developed countries opposed any inclusion of liability and compensation (Rio Principle 13).

B. New developments and challenges

53. Nanomaterials incorporating nanoparticles are already used in a wide range of domestic, industrial and food products without adequate information regarding their safety.[7] No country has yet introduced nanotechnology-specific regulation that requires mandatory safety assessment tailored to the new risks of nanoparticles. The overwhelming majority of workers handling nanoparticles are not informed of the

[5] Rio Principle 16.

[6] Externalized costs include legacy issues such as obsolete stockpiles and contaminated sites, as well as children whose development has been impaired as a result of prenatal and post-natal chemical exposure; persons whose health has been injured as a result of chemical exposure; persons providing health-care services to such people when the injured are not able to pay for the services; property owners or users whose property value or utility decreases as a result of chemical contamination; fishers, hunters, small farmers and others whose livelihoods are impaired by chemical contamination; indigenous peoples whose way of life has been undermined through contamination of their traditional foods; people whose water supply is contaminated; and others. Externalities of modern agriculture can include depletion of water, soil and biodiversity; pollution by pesticides and fertilizers; and the resulting economic and social costs to communities.

[7] Examples include food additives, fuel catalysts, sports goods, specialty building equipment, electronics, household appliances, sunscreens and other products.

fact. No products are labelled. So-called third and fourth generation nanotechnologies are on the horizon, so the "simpler" variation in the first and second generations needs to be addressed without delay. This will make it possible to deal with more complex and questionable ethical applications more immediately.

54. With respect to children's environmental health, children have a higher risk of chemical exposure because they have higher respiration and metabolic rates than adults; they eat and drink more per body weight; and they live life closer to the ground, crawling, digging in dirt and putting objects in their mouths. The World Health Organization (WHO), the United Nations Children's Fund (UNICEF), and the United Nations Environment Programme (UNEP) have identified a growing number of adverse effects on children's health from exposure to hazardous chemicals.[8] Despite this, most chemicals in use have not been adequately tested for harm and/or for their combined impacts on children.

V. Waste

A. Introduction

55. There is no waste in nature, and human systems also need to work in this way. If this view is accepted, it will fundamentally change the way materials are designed, traded, used and discarded. This should be the main goal for a zero-waste society. But what do we do with the 2 billion tons of waste generated in 2009, 2010, and in 2011, when it will have grown by 37 per cent to nearly 2.5 billion?

56. Are these billions of tons fit to enter air, water, or land? Who will bear the cost of the contamination, disruption and pure nuisance they cause? Who will pay the veterinary bills for extracting 20 kilograms of plastic from the stomach of a cow in Bamako; cleaning the water that flows through the dump in Accra; closing New York City's legendary "Fresh Kills" landfill, now the highest point on the entire east coast of the US; or treating the lung infections of 150,000 waste pickers in New Delhi?

57. Even now, in the twenty-first century, there are many urban areas in the world where the only regular or reliable waste collection services (if they exist at all) are provided by illegal one-truck businesses run from people's homes; where adolescents and their small sisters and brothers see the dump site as a playground and a source of materials to sell for pocket money; where informal entrepreneurs who risk their health and safety to recycle are persecuted instead of praised, criminalized instead of commended; where the safest way of managing hazardous industrial materials is for workers to burn them openly and breathe in the toxic fumes? Clearly, there is still a long way to go.

58. With less than 5 per cent of plastic being recycled, much of the waste ends up joining the ocean vortices, through direct dumping, river transport or unsecured landfills. This has created enormous plastic gyres in the Pacific, Atlantic and Indian oceans that contain and release toxic chemicals. The Pacific Ocean plastic patch

[8] These include asthma, birth defects, hypospadias, behavioural disorders, learning disabilities, autism, cancer, dysfunctional immune systems, neurological impairments, endocrine and reproductive disorders.

alone is twice the size of France. The United Nations estimates that marine plastic kills over a million seabirds and 100,000 mammals and sea turtles each year.

59. Another problem is the growing incineration business. In many countries, the private sector is building large-scale incineration plants, thereby turning waste into a "natural resource" for their profit. Burning waste is never a good option and it goes totally against the logic of preventing, recycling and reusing waste.

60. Electronic waste threatens the environment and the health of both humans and animals. In violation of Rio Principle 14, 20 to 50 million tons of electronic waste is transferred to developing countries each year, much of it illegally. This has resulted in an influx of toxic waste and the contamination of land, water and humans. Green design and extended producer responsibility have not been sufficiently implemented.

61. Today, ship breaking, another phenomenon of waste dumping, is carried out mostly in yards on the beaches of South Asian countries and in China and Turkey. After 25 to 30 years, ships are at the end of their operational life. These "end-of-life" vessels are sold and dismantled to recover valuable steel; more than 90 per cent of a ship's structure consists of steel. However, ships also contain large amounts of hazardous materials.

62. With thousands of South Asian workers, desperate for jobs at any cost, dismantling ships without protection, ship breaking creates unacceptable levels of death, injury, work-related diseases and environmental pollution. This situation will be aggravated by the number of ships going out of service in the next few years following the global phase-out of single-hull oil tankers; the large estimated backlog of old vessels still operating because of high freight rates; and the general boom in shipbuilding over the last few years.

63. Toxic wastes on board "end-of-life" vessels are traded without restraint in the global marketplace. The costs of ensuring that these wastes are recovered and disposed of without polluting and endangering human health are being externalized to the workers and the environment in South Asian developing countries. This is illegal according to international law and violates well-established principles allocating the responsibility to the polluter who, in this case, is the shipowner. Further information on ship dismantling can be obtained at http://www.shipbreakingplatform.com/dmdocuments/reports/offthebeach.pdf.

64. There is broad agreement that the current approach to managing solid waste is inadequate in almost all cities, particularly those in developing and transition countries. In Austria and Canada, solid waste management consists in removing waste from urban areas and storing it for the future, in landfills. Sweden and Japan are experts at transferring waste from one medium to another by incinerating it and transferring residues to the soil and fine particles to the air.

65. There are millions of individual or family microentrepreneurs who earn their livelihoods from picking up the waste materials that end up in the empty areas in their city, processing them and selling them into the commodities value chain. Others are involved in repairing appliances, re-manufacturing or marketing second-hand or repaired items. These people are in the informal waste and recycling sector; their professions are unrecognized, their businesses are unregistered, and their activities are unseen. We do not see or acknowledge the contribution of informal recyclers because of geopolitical biases: there is a tendency to treat developing and

transition countries as imperfect or incomplete copies of an ideal system that operates in developed countries such as Canada, Denmark or Japan. However, one might ask whether a system that designs, finances, supports and perpetuates burying waste in the ground is state of the art. It is time to take a different view and respond to the growing global consensus that cities in low-income, middle-income and transition countries need to take charge of the modernization process and develop their own models for resource cycling and maintaining a clean city: their own models with a focus and approaches that fit their own conditions.

66. One of the main goals of sustainable consumption and production is to prevent waste and design products that can be recycled and repaired. While many people think that rich countries in North America and Western Europe have all the answers, they are not necessarily on the front lines in terms of the prevention and valorization of waste. In low- and middle-income countries, a variety of formal and informal and public and private systems are already in operation, so the basis for a stable mixed system is already in place. What most low- and middle-income cities lack is organization, specifically, a clear and functioning institutional framework, a sustainable financial system and a clear process for promoting the modernization agenda and improving the system's performance.

67. Because waste is becoming a major problem, it is now profitable to get rid of it by illegal dumping and burning.

B. Challenges

68. There is now broad international consensus on what has come to be known as integrated and sustainable waste management, a framework that was first developed in the mid-1980s. Integrated and sustainable waste management systems approach with three important components, all of which need to be addressed when developing or changing a solid waste management system. The components, shown in figure I, include:

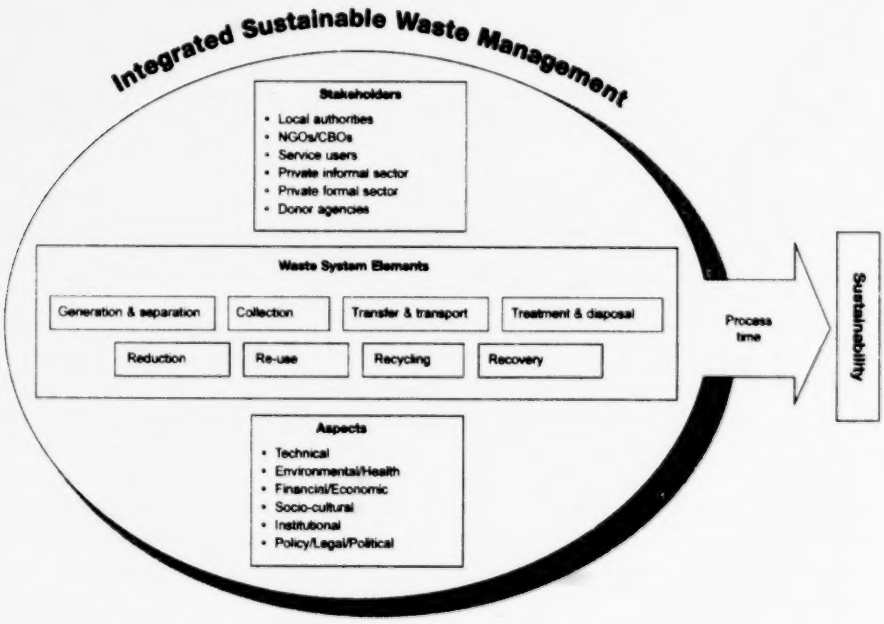
(a) **Stakeholders**: The main "official" stakeholders include the local authority (mayor, city council, solid waste department), the national environment and local government ministries and one or two private companies working under contract to the municipality. The "unofficial" stakeholders include (female) street sweepers, (male) workers on collection trucks, dump site waste pickers, some of whom may actually live on or at the edge of the dump site, and family-based businesses that live off recycling. Other key stakeholders include the waste generators and the users of the waste management service provided by the city, namely households, offices and businesses, hotels and restaurants, institutions such as hospitals and schools, and government facilities such as airports or the post office.

(b) **Elements**: This refers to the technical components of a waste management system. One of the aims of the integrated and sustainable waste management framework is to show that these technical components are part, but not all, of the overall picture. The boxes in the top row of the middle section of figure I all relate to removal and safe disposal, and the bottom row of boxes relates to the "valorization" of commodities. Solid waste management consists of a variety of activities, including reduction, reuse, recycling and composting, operated by a variety of stakeholders at various levels.

(c) **Aspects**: For a waste management system to be sustainable, it must take into account all the operational, financial, social, institutional, political, legal and environmental aspects. These aspects comprise the third component of the integrated and sustainable waste management framework and are listed in the third box of figure I. The aspects provide a series of analytical "lenses", which can be used to assess the situation, determine feasibility, identify priorities or set adequacy criteria.

(d) The term "**integrated**" refers to the linkages and interdependency between the various activities (elements), stakeholders and "points of view" (sustainability aspects). It also suggests that not only technical, but also legal, institutional and economic linkages are necessary to enable the overall system to function.

Figure I
Integrated Sustainable Waste Management Framework



Abbreviations: CBOs: community-based organizations.

VI. Transport

A. Introduction

69. Transport is linked to economic development in many ways. Passenger transport can widen people's options regarding where to live and work. The transport of goods enables trade; trade leads to larger-scale production and enables countries to reap the benefits of comparative advantages. Larger-scale production and comparative advantages make economies work more efficiently.

70. However, although too little or no transport is a problem for societies, too much transport is also a problem. We know all too well the inexorable rise in greenhouse gas emissions from transport, urban congestion, accidents, air pollution and noise. Moreover, transport system development often exacerbates social inequality by prioritizing, explicitly or implicitly, car users over vulnerable road users. Last but not least, the global obesity epidemic is closely linked to the use of cars, an important element of a sedentary lifestyle.

71. Owing to advances in transport technology, people now travel about 1.2 hours a day — on average they do not spend more of their time in transit. North Americans can travel about 80 kilometres in that time, while people in sub-Saharan Africa travel 8 kilometres in the same period of time. Speed is a central determinant of transport volume. In North America, the use of cars and air travel is widespread, and it is aviation that represents the next quantum leap for humanity in terms of the distance that can be covered in an average day. However, the delays caused by congestion limit transport growth; if all the world's congestion problems were solved today, transport volumes would explode tomorrow. The key point is that people plan their journeys on the basis of the time they take, not on the basis of how far they are going.

72. People do not plan their travel solely on the basis of time; they also factor in costs. An average of 10 to 15 per cent of income is spent on transport worldwide. In the poorest countries, where zero-cost walking is prevalent, this percentage is somewhat lower.

73. Historically, transport costs have fallen very quickly. The cost of driving a car is approximately half of what it was 50 years ago and the cost of air travel has fallen even more dramatically. The reason for this is technological innovation and competition in the car and aviation industries.

74. Owing to the increase in speeds and disposable incomes, on the one hand, and lower transport costs on the other, globally averaged passenger transport demand increased more than fourfold between 1950 and 2005.

75. In summary, people try to maximize travel options, within their time and budget constraints, and technology, speed and income developments have led to a fourfold increase in kilometres per head since 1950. The most powerful way to tackle transport demand, apart from outright restrictions, is to develop policies that influence the speed and cost of transport. Similar observations have been made with respect to freight transport.

B. Constraints and obstacles

76. Parallel with the worldwide demand for transport, demand for energy (almost all of it oil) and, with it, emissions of carbon dioxide (CO2) more than quadrupled between 1950 and 2005. CO2 emissions stubbornly remain around 100 grams per kilometre (g/km). There has been no improvement in the energy efficiency of global passenger transport, despite all the technological innovation in the past 55 years.

77. There are essentially three reasons for this shocking conclusion. The first is that, with growing incomes and the lower cost of car and air travel, we have seen a huge modal shift towards less energy-efficient modes of transport. Secondly, much of the technological innovation in modes of transport has been used to increase

power, speed and comfort, rather than to reduce fuel consumption and CO2. Cars and ships are much more powerful than before and can go much faster, and aircraft fuel consumption increased threefold, with the introduction of jet aircraft in the early 1960s. Thirdly, occupancy rates have fallen as a result of increased vehicle ownership.

78. It is in cities that problems relating to too much transport are the most visible. Transport-related congestion, air pollution, noise and accidents have a very serious impact on the quality of life in cities worldwide, but especially in fast-growing megacities in developing countries. Globally, approximately one million people die annually in road accidents, many of them in cities. Even more people die prematurely as a result of transport-related air pollution and noise.

79. Global trends in the transport of both goods and passengers are not sustainable. The fast rise in the use of cars, trucks, planes and ships brings enormous challenges for human health, the world's cities and the planet.

80. Governments have a key role to play, for it is primarily Governments that have the tools to correct unsustainable trends through regulatory, pricing, planning and education measures. There is no lack of successful examples but, if these are to be copied and improved upon, extensive partnership and consultation with national and international experts, NGOs and industries will be needed. Ultimately, success will depend on whether Governments have the political courage to take the necessary steps. If they do, the rewards will be significant.

C. Challenges

81. There is not one silver bullet solution to transport's many challenges. Every problem and every political culture requires unique approaches. However, it is clear that the sum of transport decisions by individuals does not add up to a sustainable transport system. It is also clear that Governments play a critical role, as their policies regarding infrastructure planning and access, transport pricing and safety, are pivotal. It can even be said that emissions, air pollution, noise and accident problems will not be solved by market forces, since they are all classical "external costs" that cannot be solved without Government intervention.

1. Technical standards for vehicles and fuels

82. Standard-setting for cleaner and safer vehicles and fuels started in the 1960s, with seat belts being one of the first items to be regulated. Since then, regulations have multiplied. Examples of recent additions include new CO2 standards (the United States, the European Union and South Korea), tyre pressure monitoring systems for cars (the United States and the European Union), electronic stability control and pedestrian protection rules for cars and lane departure warning systems for trucks (the European Union).

83. Many of these standards have been extremely effective. Leaded petrol has been phased out almost completely all over the world, a situation deemed unthinkable only 10 years ago. Air pollution standards for vehicles have also proliferated, although in-use compliance of vehicles and the legacy fleet still often pose enormous challenges. More recently, CO2 standards have been agreed upon in the United States and Europe, which has caused automotive companies to drastically

redirect their research and development and marketing efforts towards fuel efficiency; these standards might also break the trend towards ever larger and more powerful engines.

84. Extracting carbon from fuel has been proven to be one of the greatest challenges; biofuel policies have been discredited for being ineffective and sometimes even counterproductive, and other alternatives such as electricity and, in particular, hydrogen, seem even further away.

85. Typically, the greatest challenge in setting standards is overcoming industry resistance. The vehicle and oil industries are among the most powerful vested interests in the world. It requires political courage and stamina to overcome their objections. Social arguments (keep vehicles and fuels affordable) and economic arguments (keep the industry in business) also often play a role. However, past experience shows little evidence to support these claims; the long-term future of the industry is still sunny. Many of the standards have spurred innovations necessary for long-term survival; and they have played an important role in protecting the vulnerable from the effects of vehicle use. A disadvantage of standards is that, by definition, they scarcely alter mobility patterns and therefore offer no "integral" solution to transport problems.

2. Transport and fuel pricing strategies

86. Governments have an enormous influence on the price of transport, through the taxation of fuel and vehicles, and the financial management of public transport and aviation.

87. Fuel taxes are a simple and critical policy tool. Fuel prices affect overall transport demand, mode choice and the fuel efficiency of vehicles; a 10 per cent rise in fuel prices in the long run reduces the demand for fuel and CO2 emissions by 7 per cent. Some countries tax their fuel at $1 per litre, while others subsidize it, which leads to petrol in Venezuela (Bolivarian Republic of) being about 100 times cheaper than in Turkey, with North Americans burning three times the amount of transport fuel for each dollar earned, compared with western Europeans.

88. Social arguments often play a role in keeping fuel prices low. However, research indicates that subsidizing fuel is often an inefficient way to improve the plight of the poor. Targeted poverty relief schemes can be much more effective. Some countries tax vehicle purchases and some even base these purchase taxes on the environmental performance of the car. Others do not. Purchase taxes have a significant effect on car ownership and use. Car ownership in Poland is comparable to that in Denmark, although Danes are more than twice as rich. The main reasons are the high car purchase taxes in Denmark; excellent alternative means of transport such as cycling also play an important role. Most countries subsidize public transport, but to very different degrees.

3. Infrastructure investment

89. Infrastructure investment is often considered a miracle tool for boosting economic growth. However, the reality is more complex. The first road or rail track connecting remote villages to markets further away might offer tremendous benefits in comparison with the costs. However the law of diminishing returns applies: the

more infrastructure there is, the more costly added capacity becomes and the lower the benefits.

90. The type of infrastructure is just as important as the quantity. The main choice here is not road versus rail, but rather individual motorized transport versus collective and non-motorized transport. For example, rapid transit bus systems can provide tremendous mobility advantages, at a fraction of the cost of heavy rail systems. Cycling and low-speed mopeds are also attractive, low-cost sustainable mobility options. All too often priority is given to cars, which can easily make using a bicycle too dangerous to even consider; this leads to more people actually needing cars.

4. Land use planning and cultural change

91. All too often, individual motorized transport, particularly cars, is seen as a key indicator of progress; collective alternatives are less fashionable, although they are often much more efficient, particularly when space is scarce. In postmodern societies such as Japan cars seem to be losing their appeal as status symbols, particularly in the case of young people, who prefer to spend their money on phones and Wiis. However, in many developing economies, cars are the number one aspiration of the burgeoning middle class. Sprawling megacities inevitably spawn car dependency. Changing these public and political perceptions; promoting high-density building; designing roads that limit the impact on the environment; and taking collective and non-motorized forms of transport more "upmarket" are key.

5. Aviation and shipping

92. Aviation and shipping are often forgotten in the discussion on sustainable transport, largely because aircraft and ships are much less visible in everyday life; yet, they account for approximately a quarter of our fuel use and greenhouse gas emissions from transport, and both modes are growing more quickly than other forms of transport. As we have seen, aviation is likely to occupy a huge slice of future transport demand and CO2 emissions growth, because it allows people to clock up so many miles in the 1.2 hours a day they are prepared to spend on travel. Aviation is a hugely tempting mode for many Governments because it requires relatively little infrastructure investment. But the same Governments should be aware that, when they invest in new airport capacity, they also invest in a future dependence on long-distance travel, with all the associated impacts on oil use and the climate. The global community must assume responsibility for finding a solution to the environmental impacts of these modes but, thus far, neither the International Civil Aviation Organization nor the International Maritime Organization (the United Nations aviation and shipping agencies) has delivered a credible way forward.